

LAMPIRAN

Lampiran 1. Hasil Determinasi Tanaman Bawang Merah

HERBARIUM JATINANGOR
LABORATORIUM TAKSONOMI TUMBUHAN
DEPARTEMEN BIOLOGI FMIPA UNPAD
Gedung D2-212, Jl. Raya Bandung Sumedang Km 21 Jatinangor
Telp. 022-7796412, email: phanrogamaci@yahoo.com

LEMBAR IDENTIFIKASI TUMBUHAN
No.86/HB/12/2019

Herbarium Jatinangor, Laboratorium Taksonomi Tumbuhan, Departemen Biologi FMIPA UNPAD, dengan ini menerangkan bahwa :

Nama : Mia Krismonika Situmorang
NPM : 11161036
Instansi : Universitas, Bhakti Kencana.
Telah melakukan identifikasi tumbuhan, dengan No. Koleksi : -
Tanggal Koleksi : 20 Desember 2019
Lokasi : Caringin, Bandung.

Hasil Identifikasi,
Nama Ilmiah : *Allium cepa* L.
Sinonim : *Allium angolense* Baker
Nama Lokal : Bawang merah
Suku/Famili : Amaryllidaceae

Klasifikasi (Hierarki Taksonomi)

Kingdom	Plantae
Divisi	Magnoliophyta
Class	Liliopsida
Ordo	Asparagales
Famili	Amaryllidaceae
Genus	<i>Allium</i>
Species	<i>Allium cepa</i> L.

Referensi:
Backer, C. A. and Bakhuizen v/d Brink R. C Jr. 1963. *Flora of Java*. Wolter-Noordhoff NV. Groningen.
Cronquist, Arthur. 1981. *An Integrated System of Classification of Flowering Plants*. Columbia University Press. New York
The Plant List. *Website Dunia Tumbuhan*. <http://www.theplantlist.org/tpl1.1/record/kew-713>
. Diakses tanggal, 24 Desember 2019.

Jatinangor, 24 Desember 2019

Identifikasi,

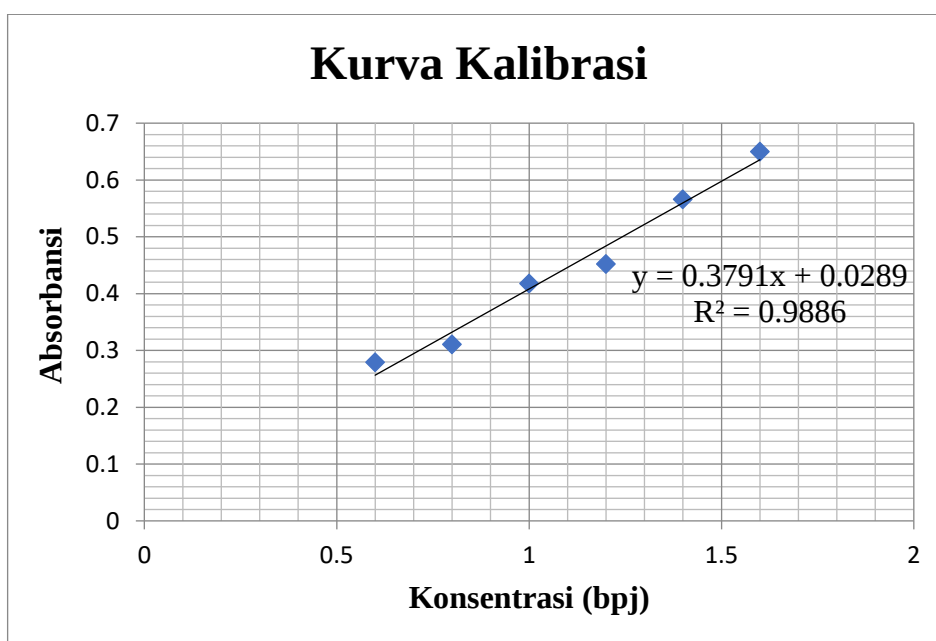
Des. Joko Kusmoro, M.P.
NIP. 19600801 199101 1 001

Dinas dan Kantor

Lampiran 2. Data Kurva Kalibrasi Nitrit

Konsentrasi (bpj)	Absorbansi
0.6	0.279
0.8	0.311
1	0.418
1.2	0.452
1.4	0.566
1.6	0.650

Lampiran 3. Hasil Kurva Kalibrasi Nitrit



Lampiran 4. Perhitungan Batas Deteksi (BD) & Batas Kuantitasi (BK)

C (bpj)	Abs	y'	(y-y') ²	BD (bpj)	BK (bpj)
0,6	0,279	0,2564	5,0947 x 10 ⁻⁴		
0,8	0,311	0,3323	4,5187 x 10 ⁻⁴		
1	0,418	0,4081	0,9829 x 10 ⁻⁴		
1,2	0,452	0,4839	10,1852 x 10 ⁻⁴	0,1908	0,6360
1,4	0,566	0,5597	0,3915 x 10 ⁻⁴		
1,6	0,65	0,6356	2,0818 x 10 ⁻⁴		
Σ :			0,002325486		
Syx			0,0241		
V _{x0}			2,1920		

❖ Persamaan regresi linier

$$y = bx + a$$

$$y = 0,3791x + 0,0289 \rightarrow a = 0,0289$$

$$b = 0,3791$$

$$R^2 = 0,9886$$

❖ Standar Deviasi

$$SD = \frac{\sqrt{\sum (X_i - \bar{X})^2}}{n-2}$$

$$SD = \frac{\sqrt{0,002325486}}{6-2}$$

$$SD = 0,0241$$

❖ Batas Deteksi (BD)

$$BD = \frac{3 \times Sy/x}{b \text{ (slope)}}$$

$$BD = \frac{3 \times 0,0241}{0,3791} = 0,1908$$

❖ Batas Kuantitasi (BK)

$$BK = \frac{10 \times Sy/x}{b \text{ (slope)}}$$

$$BK = \frac{10 \times 0,0241}{0,3791} = 0,6360$$

❖ **Simpangan Baku Relatif (Koefisien Variansi)**

$$\%KV = \frac{s}{\bar{x}} \times 100\%$$

$$\%KV = \frac{0,0241}{1,1} \times 100\%$$

$$\%KV = 2,1920$$

Lampiran 5. Perhitungan Akurasi

Konsentrasi Teoritis (µg/mL)	Absorbansi	Konsentrasi Terukur (µg/mL)	Recovery (%)	Rata-Rata Recovery (%)
0	0,094	0,172		
	0,350	0,847	112,547	
0,6	0,362	0,879	117,823	115,625
	0,359	0,871	116,504	
	0,402	0,984	101,556	
0,8	0,428	1,053	110,129	104,524
	0,403	0,987	101,886	
	0,535	1,335	116,328	
1	0,537	1,340	116,856	118,175
	0,554	1,385	121,340	

Rumus % Perolehan Kembali (*Recovery*)=

$$\frac{\text{konsentrasi pengukuran} - \text{konsentrasi sampel}}{\text{konsentrasi teoritis}} \times 100\%$$

❖ **Konsentrasi 0,6 bpj**

- $\%Recovery = \frac{0,847-0,172}{0,6} \times 100\% = 112,547 \%$

- $\%Recovery = \frac{0,879-0,172}{0,6} \times 100\% = 117,823 \%$

- $\%Recovery = \frac{0,871-0,172}{0,6} \times 100\% = 116,504 \%$

$$\text{Rata - Rata} = \frac{112,547 + 117,823 + 116,504}{3} = 115,625 \%$$

❖ **Konsentrasi 0,8 bpj**

- $\%Recovery = \frac{0,984-0,172}{0,8} \times 100\% = 101,556 \%$

- $\%Recovery = \frac{1,053-0,172}{0,8} \times 100\% = 110,129 \%$

- $\%Recovery = \frac{0,987-0,172}{0,8} \times 100\% = 101,886 \%$

$$\text{Rata - Rata} = \frac{101,556 + 110,129 + 101,886}{3} = 104,524 \%$$

❖ Konsentrasi 1 bpj

- $\%Recovery = \frac{1,335-0,172}{1} \times 100\% = 116,328 \%$

- $\%Recovery = \frac{1,340-0,172}{1} \times 100\% = 116,856 \%$

- $\%Recovery = \frac{1,385-0,172}{1} \times 100\% = 121,340 \%$

$$\text{Rata - Rata} = \frac{116,328 + 116,856 + 121,340}{3} = 118,175 \%$$

Lampiran 6. Perhitungan Presisi

❖ Presisi Hari Ke-1

Absorbansi	Konsentrasi (Xi)	Xi-Xbar	(Xi-Xbar) ²
0,377	0,9182	-0,0497	0,0025
0,412	1,0106	0,0427	0,0018
0,371	0,9024	-0,0655	0,0043
0,401	0,9815	0,0136	0,0002
0,409	1,0026	0,0347	0,0012
0,405	0,9921	0,0242	0,0006
Rata-rata (Xbar):	0,9679	Σ: SD: %KV:	0,0106 0,0459 4,7468

- Standar Deviasi

$$SD = \frac{\sqrt{\sum (Xi - \bar{X})^2}}{n-1}$$

$$SD = \frac{\sqrt{0,0106}}{6-1}$$

$$SD = 0,0459$$

- Koefisien Variasi (%

KV)

$$\% KV = \frac{SD}{\bar{X}} \times 100\%$$

$$\% KV = \frac{0,0459}{0,9679} \times 100\%$$

$$\% KV = 4,7468 \%$$

❖ Presisi Hari Ke-2

Absorbansi	Konsentrasi (Xi)	Xi-Xbar	(Xi-Xbar) ²
0,415	1,0185	-0,0286	0,0008
0,429	1,0554	0,0084	0,0001
0,442	1,0897	0,0426	0,0018
0,439	1,0818	0,0347	0,0012
0,404	0,9894	-0,0576	0,0033
0,426	1,0475	0,0004	0,0000
Rata-rata (Xbar):	1,0470	Σ : SD: %KV:	0,0072 0,0380 3,6314

• Standar Deviasi

$$SD = \frac{\sqrt{\sum (Xi - X)^2}}{n-1}$$

$$SD = \frac{\sqrt{0,0072}}{6-1}$$

$$SD = 0,0380$$

• Koefisien Variasi (%

KV)

$$\% KV = \frac{SD}{X} \times 100\%$$

$$\% KV = \frac{0,0380}{1,0470} \times 100\%$$

$$\% KV = 3,6314 \%$$

❖ Presisi Hari Ke-3

Absorbansi	Konsentrasi (Xi)	Xi-Xbar	(Xi-Xbar) ²
0,415	1,0185	0,0106	0,0001
0,416	1,0211	0,0132	0,0002
0,414	1,0158	0,0079	0,0001
0,408	1,0000	-0,0079	0,0001
0,407	0,9974	-0,0106	0,0001
0,406	0,9947	-0,0132	0,0002
Rata-rata (Xbar):	1,0079	Σ : SD: RSD:	0,0007 0,0118 1,1704

• Standar Deviasi

$$SD = \frac{\sqrt{\sum (Xi - X)^2}}{n-1}$$

$$SD = \frac{\sqrt{0,0007}}{6-1}$$

$$SD = 0,0118$$

• Koefisien Variasi (%

KV)

$$\% KV = \frac{SD}{X} \times 100\%$$

$$\% KV = \frac{0,0118}{1,0079} \times 100\%$$

$$\% KV = 1,1704 \%$$

Lampiran 7. Perhitungan Kadar Nitrit Pada Sampel Bawang Merah

	Bobot Sampel (g)	Absorbansi	Konsentrasi (µg/mL)	Kadar (µg/g)	Kadar (µg/mg)
	4,006	0,229	0,5278	3,9528	3952,7888
	4,021	0,231	0,5331	3,9774	3977,4040
	4,062	0,243	0,5648	4,1710	4171,0387
Rata-rata	4,0297	0,2343	0,5419	4,0337	4033,7439

❖ Diketahui:

- $y = bx + a$
 $y = 0,3791x + 0,0289 \rightarrow a = 0,0289$
 $b = 0,3791$

- Faktor Pengenceran = 10
- Volume Total = 3 mL

❖ Ditanyakan: Kadar nitrit dalam sampel ?

❖ Jawab:

- $\text{Konsentrasi} = \frac{y(\text{abs}) - a(\text{intersep})}{b(\text{slope})}$
 1. $\text{Konsentrasi} = \frac{0,229 - 0,0289}{0,3791} = 0,5278 \text{ µg/mL}$
 2. $\text{Konsentrasi} = \frac{0,231 - 0,0289}{0,3791} = 0,5331 \text{ µg/mL}$
 3. $\text{Konsentrasi} = \frac{0,243 - 0,0289}{0,3791} = 0,5648 \text{ µg/mL}$

$$\text{Rata - Rata} = \frac{0,5278 + 0,5331 + 0,5648}{3} = 0,5419 \text{ µg/mL}$$

- $\text{Kadar Nitrit} = \frac{\text{konsentrasi} \times \text{fp} \times \text{volume}}{\text{bobot sampel}}$
 1. $\text{Kadar Nitrit} = \frac{0,5278 \text{ µg/mL} \times 10 \times 3\text{mL}}{4,006 \text{ g}} = 3,9528 \text{ µg/g}$
 2. $\text{Kadar Nitrit} = \frac{0,5331 \text{ µg/mL} \times 10 \times 3\text{mL}}{4,021 \text{ g}} = 3,9774 \text{ µg/g}$
 3. $\text{Kadar Nitrit} = \frac{0,5648 \text{ µg/mL} \times 10 \times 3\text{mL}}{4,062 \text{ g}} = 4,1710 \text{ µg/g}$

$$\text{Rata - Rata} = \frac{3,9528 + 3,9774 + 4,1710}{3} = 4,0337 \text{ µg/g}$$

Lampiran 8. Dokumentasi



Hasil Reaksi Optimasi Suhu



Hasil Reaksi Optimasi Waktu



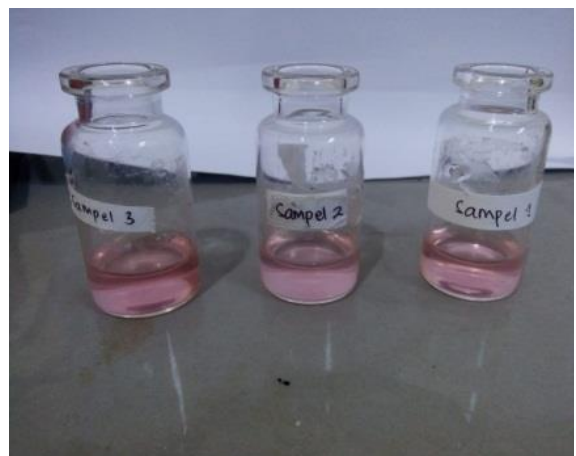
Hasil Reaksi Selektivitas NO_3^- & NO_2^-



Hasil Reaksi Larutan Kurva Kalibrasi



Hasil Preparasi Sampel Bawang Merah



Hasil Reaksi Sampel Secara Triplo